ALLIEDSIGNAL, INC.

WORK PLAN

PLANT DECOMMISSIONING

PROCESS EQUIPMENT DRAINING AND WASHING

LCP CHEMICALS-GEORGIA
BRUNSWICK, GEORGIA

July 15, 1994

PREPARED BY: G. B. MERICSKO
REV. 1

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1.0 PLAN OBJECTIVE - The principle objective of this Work Plan is to provide a working tool to organize and plan the field operations associated with the dismantlement and remediation of the LCP-Georgia site. The first phase, which this plan addresses, involves draining and washing efforts required to prepare the process equipment and associated piping for future safe dismantlement. Building dismantlement, transformer draining, lubricating oil drainage, refrigerant removal and other remediation efforts are not included in this plan.

In carrying out the Plan objective, the work effort will be done using environmentally sound and safe methods that are both feasible and economical. It is the intent of this plan to recycle the maximum amount of material as possible. In addition, this plan will be implemented using all the procedures addressed in the Health and Safety Plan prepared for this site.

As the work progresses, updates to this plan will be made should situations arise that make this necessary.

2.0 SITE DESCRIPTION - The plant site occupies approximately 550 acres with manufacturing and support facilities on approximately 30 acres. The chlorine-caustic operations were from 1956 until February 1994. Prior to the construction of the chlorine-caustic facilities, there were petroleum refining, paint manufacturing and electrical power generation facilities on the site. Many of the support buildings date back to refining days.

The backbone of the chlorine-caustic production is the 100 mercury type electrolytic cells located in two cell rooms. These cells converted purified sodium chloride brine into gaseous chlorine, sodium hydroxide and by-product gaseous hydrogen.

In recent years sodium chloride was received in bulk rail hopper cars and unloaded into three storage bins from which it was fed at a controlled rate into the process. This portion of the plant is located between the two cell rooms and contains equipment to handle the dry salt, and perform the saturation and purification of the brine solution prior to being fed into the cells.

Gaseous chlorine from all the cells was collected into a common header, referred to as the strong gas header, operating under slight vacuum. The gas was cooled and dried using direct contact with sulfuric acid and compressed prior to being liquified. Liquified chlorine was then stored prior to shipment and/or used to produce bleach or 20 Baume hydrochloric acid.

The sodium hydroxide from the cells was produced at approximately 50 wt%. Each cell building had a collection tank into which each of the cells discharged. The collected caustic was then filtered using carbon to reduce the mercury levels, prior to storage. From storage, the 50 wt% caustic was shipped via truck or rail. In the past, caustic was also shipped via barge. Caustic was also consumed internally in the bleach plant.

The by-product, hydrogen, was collected via headers and compressed using liquid ring compressors. Each cell building had its own liquid ring compressors. The compressed hydrogen was then combined, cooled and filtered removing entrained moisture and mercury droplets. Purified hydrogen was then utilized as fuel in the plant's boilers, to produce 20 Baume hydrochloric acid, and sent off-site via pipeline for consumption at the adjacent Hercules facility.

Facilities for producing a bleach solution, sodium hypochlorite, were also present. These utilized a 35 wt% sodium hydroxide solution to react with chlorine. The major chlorine source was from the various process vents containing chlorine. Prior to discharge to the atmosphere, the chlorine was scrubbed from the vents and the resulting solution cooled, filtered, and stored prior to shipment. The bleach plant also contained a hypochlorite destruct system that was utilized to destroy the hypochlorite when the solution was off specification or because of lack of sales. This destruct system utilized a heated batch reactor and a copper salt catalyst that accelerated the sodium hypochlorite decomposition into oxygen and sodium chloride.

Purified 20 Baume hydrochloric acid solution was produced by burning gaseous chlorine in a hydrogen atmosphere and absorbing the gaseous hydrogen chloride in water. Aqueous acid from the four chlorine burners was collected and sent to product storage prior to shipment.

A small gas-fired batch mercury still was utilized to reclaim off-grade mercury from the cells and amalgums.

A boiler plant producing process steam contained two boilers. During the life of this plant the boilers utilized oil, natural gas and by-product hydrogen as fuel. Associated with this was the softening and feed water treatment.

A power plant produced compressed air for plant and instrumentation usage.

The plant also contains Waste Water Treatment facilities described in another section of this Work Plan.

3.0 PERSONNEL BACKGROUND - Since the site recently ceased operation, experienced operating, maintenance and supervisory personnel are available and will be utilized whenever practical for Phase I and other future portions of the work plan. This is advantageous because of their familiarity with the materials and process equipment, as well as any associated hazards. The plant's personnel have performed many equipment and line washings in the past for numerous plant maintenance projects. These washings utilized procedures that were incorporated into the Standard Operating Procedure.These procedures will be updated and included in the Health and Safety Plan.

In addition, all personnel have completed a forty-hour Hazardous Waste Workers' Training Course.

Where specialized expertise is required for a specific cleaning operation, qualified outside contractors will be utilized.

All personnel involved in this operation will be required to follow the requirements and procedures addressed in the Health and Safety Plan. The personnel protective equipment requirements are described in the Health and Safety Plan.

4.0 WORK AREA - With few exceptions, the process equipment and piping are located within contained areas. Any spills or drips from the washing operation can be collected and directed to the Waste Water Treatment for processing prior to discharge to the process sewer. Should any equipment or line decontamination be required outside of a contained area, provisions will be made for temporary containment and diversion to the Waste Water Treatment.

Prior to the shutdown of operation, rehabilitation of equipment and structures was underway in several areas with additonal areas scheduled for rehabilitation in the near future. With the shutdown, the rehabilitation was terminated. Therefore, it is required that prior to start of any decontamination effort, the area be inspected for safety, assuring the structural integrity of working platforms and equipment. This inspection requirement is covered in the Health and Safety Plan.

It is anticipated that the washout of the process equipment can be accomplished without removing or disrupting any existing asbestos insulation. Should any removal be required, this will be handled by an outside contractor knowledgeable of all Federal and State regulations.

5.0 TYPE OF EQUIPMENT TO BE UTILIZED - Since the washing of process equipment has been done many times in the past, equipment is available to perform this task.

- Primary means of cleaning utilizes water flushing furnished by the many hose stations located throughout the plant. Brine, hydrochloric acid, sulfuric acid, sodium hypochlorite and sodium hydroxide are highly soluble in water. Although elemental mercury is insoluble in water, water is utilized to move small mercury droplets to a collection sump and also furnishes a means of suppressing mercury vapors. Insoluble sludges form a slurry with water that can be collected and dewatered for disposal.

- A portable mixing tank with a pump is available where neutralizing agents, such as sodium bicarbonate or sodium carbonate solutions, can be made up. These solutions are then circulated through lines and equipment to neutralize residual acidic material.

- For selected elemental mercury collection, a vacuum cleaner equipped with HEPA filtration and specifically designed for handling mercury is available. Squeegees and dust pans will also be utilized to sweep up mercury..

- Portable air-driven double diaphragm pumps are available to suck liquid heels and sludges from tank bottoms.

- A high pressure water washer is available for cleaning the interior surfaces of storage tanks.

6.0 WASTE WATER TREATMENT - The plant has waste water treatment facilities that have the following capabilities:

- Settling tanks where streams containing solids can be directed. The sludge can be thickened prior to dewatering.

- Two stage neutralization facilities where the alkaline streams can be automatically neutralized, using hydrochloric acid or sulfuric acid.

- Mixing tanks where a sodium hydrosulfide solution is prepared and automatically added to the neutralizers where the sulfide reacts with the soluble mercury salt forming the insoluble mercury sulfide. The automatic control scheme is based upon the oxidation-reduction potential.

- Clarifiers that concentrate the mercury sulfide prior to dewatering.

- Polishing filters, consisting of sand and precoated pressure filters, that remove the residual insoluble mercury sulfide from the treated effluent stream.

- Plate and frame pressure filters that are utilized for dewatering muds from settling tanks and clarifier. The dewatered solids are sent off-site for disposal.

- Two 40,000 gallon hold tanks where water can be collected on a batch basis and analyzed prior to discharge to the process sewer or recycled for additional treatment.

- A series of contained process areas, collection sumps, pumps and piping that can collect spills and washing for treatment prior to discharge.

7.0 MATERIAL DISPOSITION - The materials from the Phase I operation will be classified and processed as follows:

7.1 Chlorine - Residual chlorine from process equipment, lines, and tank cars will be removed by utilizing sweep air. This procedure was the past plant practice and is familiar to the personnel. The chlorine saturated sweep air is directed to the former bleach plant where it will be scrubbed from the air using a dilute sodium hydroxide solution. Chlorine readily reacts with sodium hydroxide forming sodium hypochlorite and sodium chloride which are highly soluble in water. The scrubbed sweep air is then discharged to the atmosphere.

The facilities available for this scrubbing consist of two batch reactors or a packed scrubbing tower over which a dilute sodium hydroxide solution is circulated. The batch reactor consists of a pool of 35 wt% sodium hydroxide into which the chlorine and sweep gas is sparged subsurface. Sodium hydroxide concentration in both cases is closely monitored to assure that an excess of caustic is available at all times. As the caustic is consumed, the cleaning operation is curtailed and fresh caustic solution added.

Handling of the hypochlorite solution from the chlorine scrubbing is described in the following section.

7.2 Sodium Hypochlorite - Hypochlorite solution resulting from the chlorine scrubbing operation and/or from washing of the bleach plant equipment will be destroyed in an existing "kill" reactor. The "kill" reactor is a batch reactor where a charge of hypochlorite solution undergoes a two-stage destruction. The first stage is a catalytic destruction utilizing a small quantity of a copper salt and a minimum retention time of sixteen hours. The catalytic destruction converts sodium hyporchlorite to oxygen and sodium chloride. The second stage is a chemical destruction utilizing sodium hydrosulfide that reacts with sodium hypochlorite forming sodium chloride and sodium sulfates. As a result, the treated solution will have less than 3 ppm of available chlorine. This treated solution is then passed through the waste water plant where any excess sodium hydrosulfide is consumed, pH adjusted and any mercury, if present, is removed prior to discharge to the sewer.

7.3 Hydrochloric Acid - Dilute hydrochloric acid generated from equipment and line washings will be neutralized by circulation with a sodium bicarbonate or a sodium carbonate solution. The resulting solution contains sodium chloride and liberates gaseous carbon dioxide. Prior to discharge to the process sewer the pH of the solution is checked, assuring a range of 6 to 9, and mercury concentration checked, assuring a level less than 50 ppb. Should the pH and/or mercury levels be out of the desired range, the solution will be diverted to Waste Water Treatment for additional treatment.

7.4 Sulfuric Acid - Dilute sulfuric acid generated from washing equipment and lines will be neutralized by circulation with a sodium bicarbonate or a sodium carbonate solution. The resulting solution will contain sodium sulfate and liberate gaseous carbon dioxide. Prior to discharge to the process sewer, the pH of the solution is checked, assuring a range of 6 to 9, and mercury concentration checked, assuring a level less than 50 ppb. Should the pH and/or mercury levels be out of the desired range, the solution will be diverted to the mercury waste water treatment plant for additional treatment.

7.5 Off-Grade Sodium Hydroxide - Sodium hydroxide solution varying in concentrations up to 50 wt% and having high levels of mercury will be recycled through the existing caustic filters in order to remove the excess mercury. When the mercury is within specification, this material will then be recycled off-site or utilized to scrub chlorine from sweep gas generated in decontamination of chlorine from process equipment and tank cars.

7.6 Sodium Hydroxide - Dilute sodium hydroxide generated from equipment and line washings will be collected and sent to the waste water treatment plant where it will be neutralized and the mercury removed prior to discharge to the process sewer.

7.7 Brine - Washings from the brine saturation, purification and storage areas will be collected and processed through the Waste Water Treatment plant. In the waste water treatment, the brine washings will be pH adjusted and excess mercury removed prior to discharge to the process sewer.

7.8 Off-Grade Cell Mercury and Amalgams - Any residual off-grade mercury from the cell and amalgams will be collected and the mercury reclaimed in the existing mercury still. The still consisted of a batch gas fired oven which allows the mercury to vaporize. The mercury vapor passes through a water cooled shell and tube condenser where the vapor condenses and is collected. This mercury is then recycled off-site. There is also the option of collecting the amalgam and off-grade mercury and purifying off-site prior to recycling.

7.9 Sludge Containing Elemental Mercury - Any sludge that is removed from process equipment, filtrations, trenches and sumps that contains free mercury, determined by visual inspection, will be processed through the mercury reclaim column. The mercury accumulates in the bottom of the column as the sludge discharges from the top. The sludge is then dewatered and disposed of off-site in an approved TSD facility. The elemental mercury is recycled off-site.

7.10 Cell Wash Water - Water from the cell wash can contain any of the following components: brine, sodium hydroxide, mercury and/or its salts. This water will be collected and processed in the Waste Water Treatment Plant, providing for any neutralization, solids removal and mercury removal prior to discharge to the process sewer.

7.11 Oil Contaminated Brine - A proposed method for disposing of brine solution contaminated with mercury and Bunker "C" fuel oil is to pass the material through a precoated filter and carbon bed operating in series. This is expected to remove the oil. Oil free brine is then transferred to the Waste Water Treatment Plant where the pH is adjusted and mercury removed prior to discharge to the process sewer. The residual oil sludge will be analyzed and removed by an outside contractor.

7.12 Anode graphite Collars - The anode collars from the electrolytic cells will be washed, stock piled in suitable containers and analyzed for PCB's and mercury. The analytical results will dictate the method of off-site disposal to be utilized.

7.13 Miscellaneous Lubricants, Solvents, Paints, Water Treatment and Laboratory Chemicals - In the normal daily operation of the plant, various lubricants were utilized for routine equipment maintenance, paint and solvents were used as part of an ongoing preventive maintenance program; and various chemicals utilized to perform the routine product analysis and water treatment. There are many partially consumed containers, as well as unopened containers of these items in stores. In order to avoid any safety and/or health hazard, the items no longer required for the process equipment washing will be collected and sorted. Any unopened containers will be returned to suppliers, transferred to other locations or recycled off-site. All of the remaining material will be disposed of off-site in an approved manner.

7.14 Mercury - Elemental mercury from the electrolytic cells will be pumped from the cell into containers approved for transport of mercury and recycled off-site.

7.15 Oil Tank Sludge - Any residual fuel oil sludge remaining in the two storages by the Boiler Plant will be removed by an outside contractor. Cleaning of these tanks will be done by an outside contractor.

7.16 Dry Salt - The equipment that handled and stored the dry salt (sodium chloride) will be run empty. The salt will be collected and sent to another chloro-alki facility for use. Minimal washing will be done and will pass through the waste water treatment prior to discharge to the process sewer.

8.0 PROCESS LINES AND EQUIPMENT - A Process Line List and Process Equipment List are included in the Appendix. These tabulations are for the following reasons:

- Inform personnel of the chemicals that were handled in the process lines and equipment.

- The types of materials of construction will be utilized in the future to determine means of disposal and/or recycle; also informs personnel of the type of cutting tools that can be utilized.

- Serves as a means for measuring the progress of the decommissioning.
- Gives personnel a brief description of type of equipment present.
- Allows for adding additional information required for future dismantlement, such as type of insulation, weight and etc.

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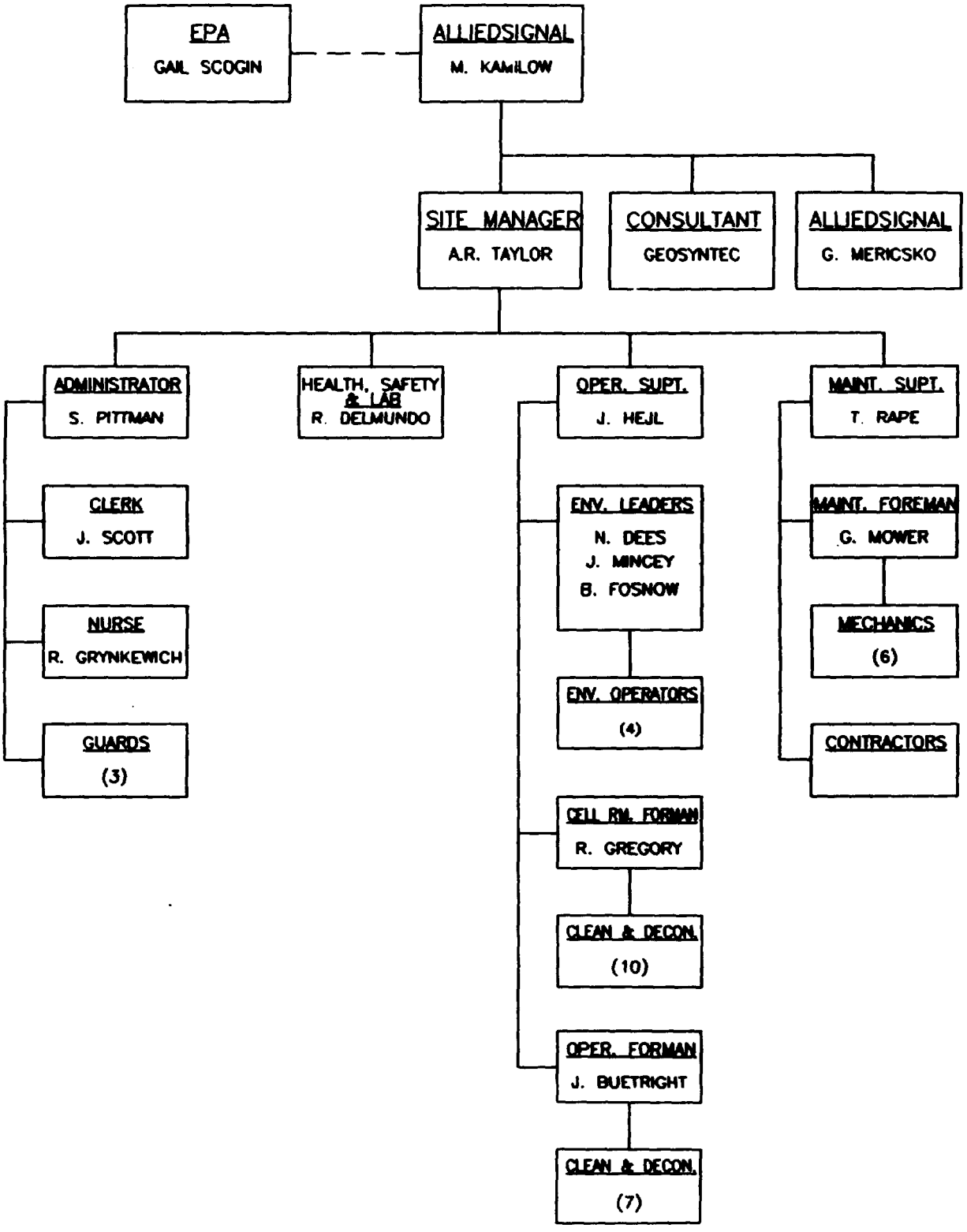
APPENDIX

LCP CHEMICALS – GEORGIA
PROCESS EQUIPMENT CLEANOUT
ORGANIZATION



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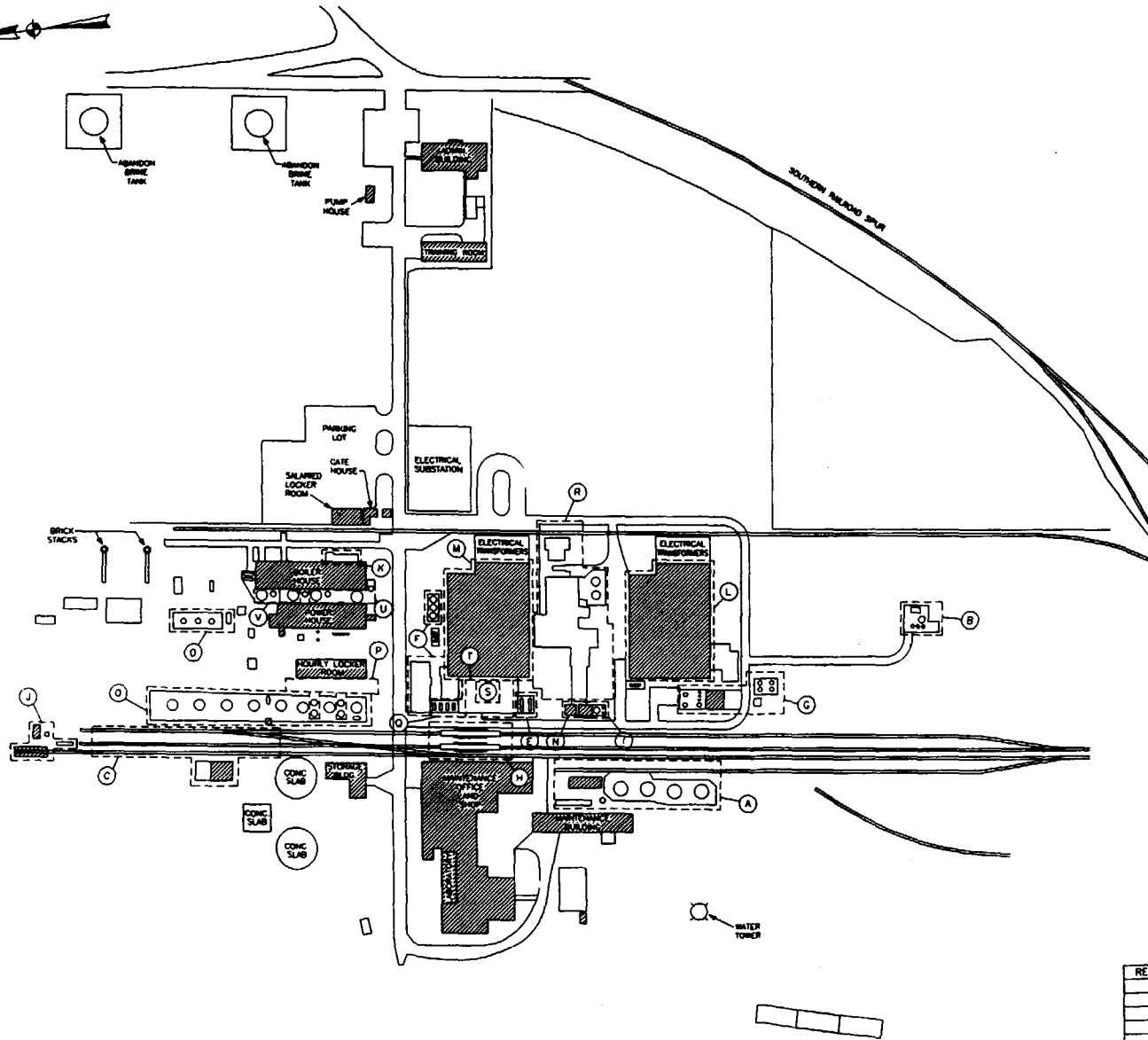


AREA	DESCRIPTION
A.	CAUSTIC TANK FARM, PUMPING, COOLING, RAIL AND TRUCK LOADING
B.	MERCURY STILL, ABANDON MERCURY RETORT AND MERCURY CONTAMINATED WASTE
C.	CHLORINE TANK CAR CLEANING
D.	COOLING TOWER, SUMP AND CHEMICAL ADDITION
E.	SULFURIC ACID STORAGE, TANK TRUCK LOADING AND UNLOADING
F.	BLEACH STORAGE, BLEACH LOADING BLEACH REACTORS AND BLEACH DESTRUCTION
G.	NEW AND OLD MERCURY WASTE WATER TREATMENT, SETTLING AND DAY TANKS
H.	CHLORINE TANK CAR LOADING
I.	SPENT CAUSTIC BACKWASH NEUTRALIZATION
J.	TANK CAR SANDBLASTING AND PAINTING
K.	HYDROGEN BRINKS AND CHILLERS
L.	NO. 2 CELL ROOM, HYDROGEN COMPRESSING, HERCULES HYDROGEN COMPRESSORS, CAUSTIC FILTRATION AND COLLECTION.
M.	NO. 1 CELL ROOM, HYDROGEN COMPRESSING, CAUSTIC FILTRATION AND COLLECTION
N.	ANION, CATION WATER PURIFICATION
O.	EIGHT BUNKER "C" FUEL TANKS, PUMP STATION AND TWO SMALL TANKS
P.	HCl STORAGE AND TRUCK LOADING
Q.	LIQUID CHLORINE TANKS AND LOOP SEAL
R.	SALT UNLOADING, SATURATION, PURIFICATION AND BRINE STORAGES
S.	CHLORINE BURNING, HCl ABSORPTION, HCl TAILS TOWER, HCl VENT SCRUBBER AND HCl RECEIVER TANKS AND PUMPS
T.	CHLORINE DRYING TOWERS, BRINKS, CHLORINE COOLERS, CHLORINE COMPRESSORS, CHLORINE LIQUIFIERS
U.	ZEOLITE, LIME SOFTENING AND BACKWASH STORAGE
V.	FUEL OIL STORAGE

REFERENCE DWGS

A	FOR PHASE I WORK PLAN	REL	

AlliedSignal

ENGINEERED MATERIALS SEC
ENGINEERING DEPARTMEN
101 COLUMBIA ROAD
P. O. BOX 2102
MORRISTOWN, NJ. 07962

PROJECT NUMBER 32382-
LOCATION BRP
RETRIEVAL CODE

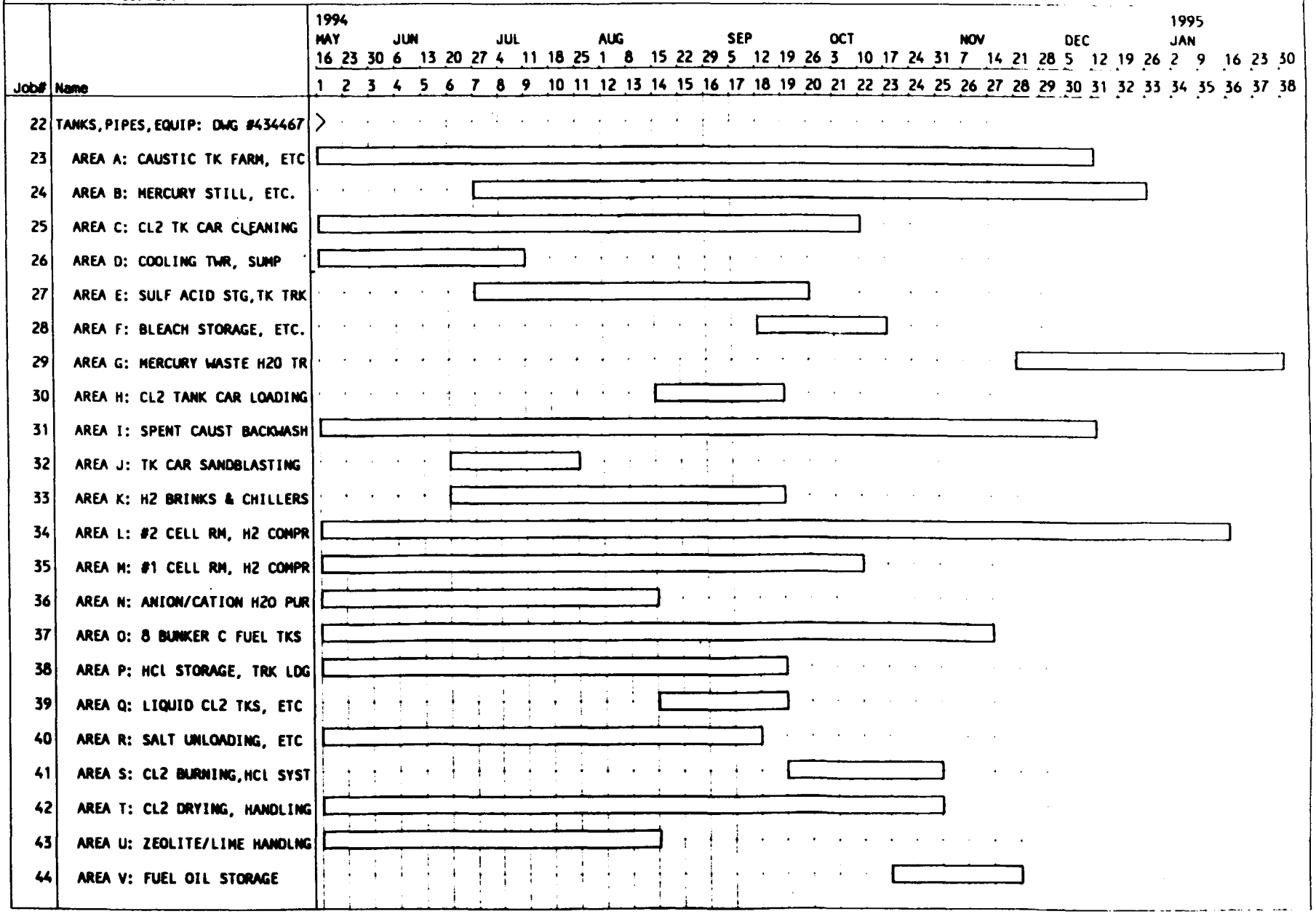
BRUNSWICK, GA.
WASHOUT SITE PLAN

DWG NO 434467

APPENDIX

PROJECT: PROCESS EQPT WASHOUT
MANAGER: A.R. TAYLOR
CURRENT DATE: 05/16/94

LCP CHEMICALS-GA,TANKS & EQUIP



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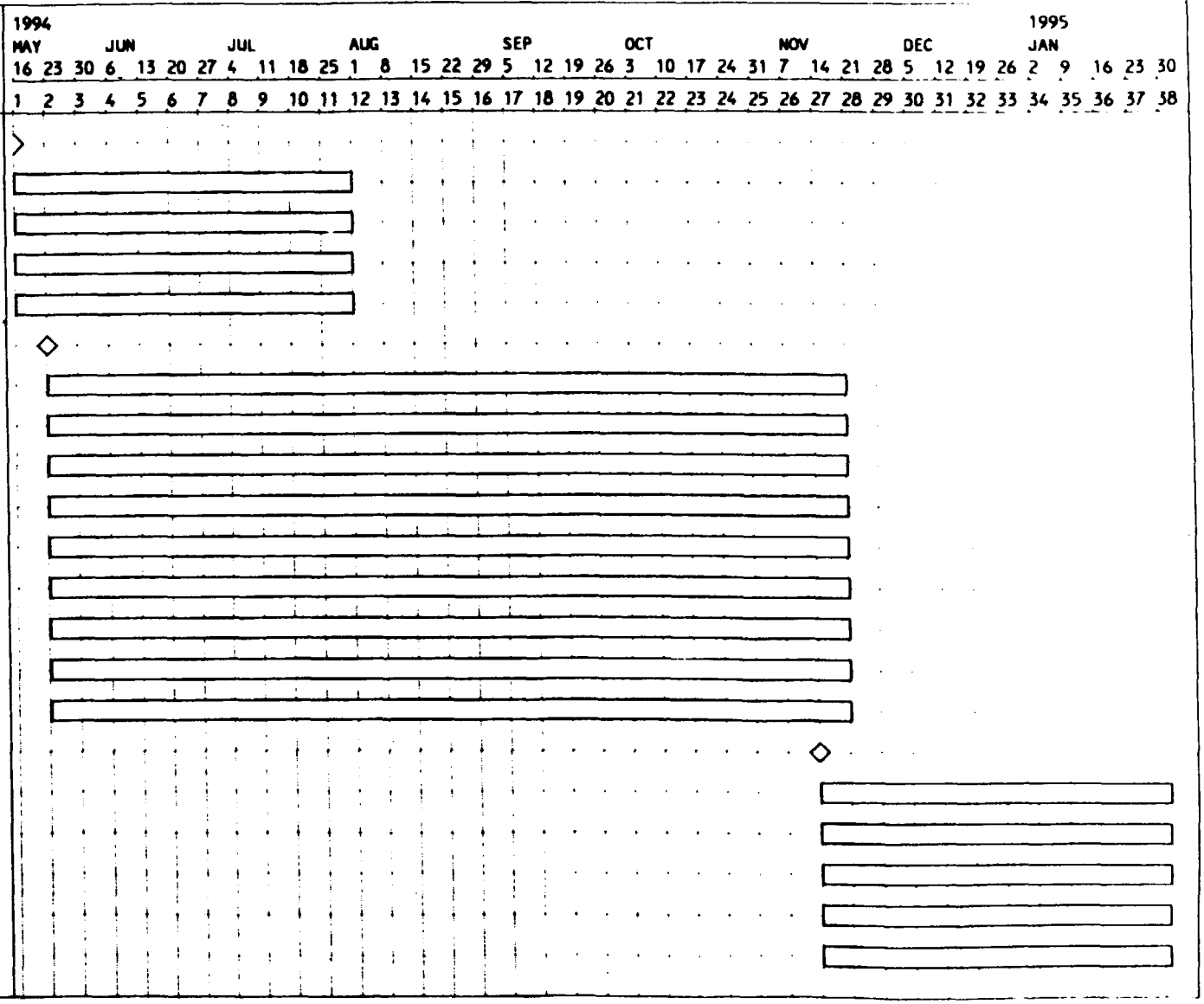
APPENDIX

PROJECT: PROCESS EQPT WASHOUT
MANAGER: A.R. TAYLOR
CURRENT DATE: 05/16/94

LCP CHEMICALS-GA, CELL CLEANING



Job#	Name
1	ELECTROLYZER SECTION
2	REMOVE COVERS
3	1st WASH
4	2nd WASH & TREAT
5	RE-INSTALL COVERS
6	DENUDER SECTON
7	REMOVE GRIDS
8	1st FLUSH COOLER
9	1st WASH
10	DISMANTLE GRIDS
11	2nd FLUSH COOLER
12	2nd WASH & TREAT
13	DRAIN Hg CHAMBERS
14	CLEAN COMPONENTS
15	DISPOSE/STORE PARTS
16	COVER DISASSEMBLY (2 SHIFTS)
17	REMOVE COVERS
18	DISMANTLE COVERS
19	CLEAN COMPONENTS
20	PACKAGE ANODES
21	DISPOSE/STORE PARTS

APPENDIX

PROCESS LINE LIST

SERVICE	COMPONENTS PRESENT	MATERIAL OF CONSTRUCTION	SIZE, APPROX. LENGTH AND ETC.
Weak Gas Header	Air, chlorine and hydrogen saturated with water vapor	PVC and Fiberglass Sections	External portion has transite shield
Strong Gas Header	Chlorine, small amounts of air & hydrogen saturated with water vapor	Fiberglass	
Tank Car Venting	Dry chlorine & air	Carbon Steel	
Tail Gas	Chlorine & inerts from liquifying	Carbon Steel	
Liquid Chlorine	Dry liquid chlorine, concentrated sulfuric acid present in some sections.	Carbon Steel	Insulated
Sodium Hydroxide	Sodium hydroxide up to 50 wt%. Elemental mercury in some sections.	Nickel, Fiberglass	Sections traced & insulated
Pure Water	Deionized water in cell rooms. Sections can contain elemental mercury.	Carbon Steel, Fiberglass	
Weak Sulfuric	Dilute sulfuric acid at 71 wt%; may have soluble chlorine.	Carbon Steel	
Strong Sulfuric	Concentrated sulfuric acid at 98 wt%.	Carbon Steel	Insulated
Brine	Sodium chloride in solution. Some areas solution is basic; in other areas acidic. Can contain impurities such as sulfates and carbonates. Can contain mercury salts. Can be chlorinated.	PVC, Fiberglass and Rubber Lined Steel	
Aqueous HCl	Hydrochloric acid solutions up to 20 baume.	PVC, Fiberglass	
Hydrogen	Wet hydrogen. Portions contaminated with elemental mercury.	Carbon Steel	Section outside battery limits supplies Hercules and is the property of Hercules Corp.
Bleach	Sodium hypochlorite in various concentrations contains sodium chloride. Can contain sodium hydroxide in various concentrations. Can contain mercury salts.	PVC, Fiberglass and Rubber Lined Steel	
Mercury	Elemental mercury	Rubber Hose	Short section on the electrolytic cell

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APPENDIX
PROCESS EQUIPMENT LIST
SALT HANDLING AREA

076	Salt Car Unloading Conveyor	Sodium Chloride Solids	Stainless Steel	Rail Car Paddle Under Rail	Sackett & Sons
077	Salt Unloading Conveyor	Sodium Chloride Solids	Carbon Steel	Belt (Rubber)	
125	Alkaline Brine Mix Tank	Sodium Chloride Solution	Monel	6'IDx6'H 50" Cone	
140	Inclined Belt Conveyor	Sodium Chloride Solids	Carbon Steel		
141	East Salt Elevator and Chute	Sodium Chloride Solids	Fiberglass	Rubber Belt Poly Buckets	May Recycle to Holtrachem
142	West Salt Elevator and Chute	Sodium Chloride Solids	Fiberglass	Rubber Belt Poly Buckets	May Recycle to Holtrachem
147	Salt Bulk Loader Screw Conveyor	Sodium Chloride Solids	Monel	50+ Feet Long	
148	Salt Storage Roof Screw	Sodium Chloride Solids	Monel, Stainless Steel	Removed	May Recycle to Holtrachem
158	West Alkaline Brine Slurry Pump		Titanium	Durco 3x2	
192	No. 1 Salt Bulk Loader	Sodium Chloride Solids	PVC Lined Steel	Cone	May Recycle to Holtrachem
193	No. 2 Salt Bulk Loader	Sodium Chloride Solids	PVC Lined Steel	Cone	May Recycle to Holtrachem
194	No. 3 Salt Bulk Loader	Sodium Chloride Solids	PVC Lined Steel	Cone	

DWG NO 434467-AREA"R"
REV 1

APPENDIX
PROCESS EQUIPMENT LIST
SATURATION AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
005	N. S.P. Filter Feed Pump	NaCl, Water, Mercury		Durco 4x3 40 hp 1800 324T	
006	S. S.P. Filter Feed Pump	NaCl, Water, Mercury		Durco 4x3 40 hp 1800 324T	
017	S.P. Filter Precoat Pump	Filter Aid, Sodium Chloride, Water, Mercury		Durco 3x2	
019	Soda, Ash, Slurry Pump	Sodium Carbonate, Water			Removed
027	Super Pure Filter	NaCl, Water, Mercury	Paint Lined Steel		Industrial
030	West Clarifier	NaCl, Water, Mercury	Carbon Steel		
032	Purification Mix Tank		Carbon Steel		
033	New Air Blower Fan	Air			
041	Soda Ash Head Tank	Sodium Carbonate, Water	Carbon Steel		Never Installed
042	Super Pure Filter Precoat Tank	Filter Aid, Sodium Chloride, Water, Mercury	FRP		
044	N. Pure Brine Storage	NaCl, Water, Mercury	Carbon Steel		
	S. Pure Brine Storage	NaCl, Water, Mercury	Carbon Steel		
	New Pure Brine Storage	NaCl, Water, Mercury	Rubber Lined Steel	12x12	
122	South Air Blow Tower Pump	NaCl, Water, Mercury, Chlorine	Titanium	Durco 3x2 10 hp 1800 215T	
123	North Air Blow Tower	NaCl, Water, Mercury, Chlorine	Rubber Lined Steel	30"IDx24'H	
124	South Air Blow Tower	NaCl, Water, Mercury, Chlorine	Rubber Lined Steel	30"IDx24"H	

APPENDIX
PROCESS EQUIPMENT LIST
SATURATION AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
159	HCl Pump	20 Baume, HCl		Wilden Diaphragm Pump	M-1
223	10% Caustic Tank	10 Wt% NaOH	Carbon Steel	6'x4'6"x6'8"	
241	HCl Head Tank 6th FL	20 Baume, HCl	Fiberglass	5'IDx7'4" Horz.	
253	HCl Tank at Grade	20 Baume, HCl	Fiberglass	6'IDx8' H	
482	M. Air Blow Tower Pump	NaCl, Water, Mercury, Chlorine	Titanium	Durco 3x2 10 hp 1800 215T	
552	N. Air Blow Tower Pump	NaCl, Water, Mercury, Chlorine	Titanium		Removed
711	East Clarifier	NaCl, Water, Mercury, Chlorine	Carbon Steel	Hole cut in side wall at half way mark 4"x6"	
	Horizontal Temporary Tank	NaCl, Mercury, NaOH, Water	Fiberglass	12'IDx27'	
	Vertical Temporary Tank	NaCl, Mercury, NaOH, Water	Rubber Lined Steel	12'x12'	

DWG. NO 434467-A AREA "R"
REV 1

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APPENDIX
PROCESS EQUIPMENT LIST
SATURATION AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
128	N. S.P. Filter Muds Pump	NaCl, Water, NaOH, Mercury, Carbonates			
129	W. Neutralization Tank	NaCl, NaOH, Water	Fiberglass		
130	Red Collection Tank	NaCl, NaOH, Water	Fiberglass		
151	Acid Brine, Filter Precoat Pump	NaCl, Water, Mercury			
152	N. Spent Brine Tank	NaCl,NaOH, Water, Mercury, Chlorine	Fiberglass	Vert. Tank 10,000 Gal.	
153	S. Spent Brine Tank	NaCl, NaOH, Water, Mercury, Chlorine	Fiberglass	Vert. Tank 10,000 Gal.	
155	No. 1 W. Brine Head Tank	NaCl,NaOH, Water, Mercury, Chlorine	Fiberglass		
157	No. 2 W. Brine Head Tank	NaCl, NaOH, Water, Mercury, Chlorine	Fiberglass		
163	Gland Water Tank	Water	Fiberglass		
182	No. 1 Saturated Brine Pump	NaCl, Water, NaOH, Mercury	Titanium		
183	Spare Saturated Brine Pump	NaCl, Water, NaOH, Mercury	Titanium		
184	No. 1 Spent Brine Pump	NaCl, Water, NaOH, Mercury	Titanium		
186	No. 2 Saturated Brine Pump	NaCl, Water, NaOH, Mercury	Titanium		
187	No. 2 Spare Brine Pump	NaCl, Water, NaOH, Mercury	Titanium		

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PROCESS EQUIPMENT LIST
SATURATION AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
188	No. 2 Spent Brine Pump	NaCl, Water, NaOH, Mercury	Titanium		
191	Gland Water Pump	Water			
195	No. 1 Salt Weigh Feeder Screw	Dry NaCl	Monel		May Recycle to Holtrachem
196	No. 2 Salt Weigh Feeder Screw	Dry NaCl	Monel		May Recycle to Holtrachem
197	No. 3 Salt Weigh Feeder Screw	Dry NaCl	Monel		
198	No. 1 Saturator	NaCl, Water, Mercury	Rubber Lined Steel		
199	No. 2 Saturator	NaCl, Water, Mercury	Rubber Lined Steel		
200	No. 3 Saturator	NaCl, Water, Mercury	Rubber Lined Steel		
202	E. No. 1 Spent Brine Cooler	NaCl, Water, NaOH, Mercury, Chlorine	Titanium Tubes, Steel Shell		
203	W. No. 1 Spent Brine Cooler	NaCl, Water, NaOH, Mercury, Chlorine	Titanium Tubes, Steel Shell		
204	W. No. 2 Spent Brine Cooler	NaCl, Water, NaOH, Mercury, Chlorine	Titanium Tubes, Steel Shell		
205	E. No. 2 Spent Brine Cooler	NaCl, Water, NaOH, Mercury, Chlorine	Titanium Tubes, Steel Shell		
206	No. 1 Acid Brine Tube Filter	NaCl, Water, NaOH, Mercury	Rubber Lined Steel		

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PROCESS EQUIPMENT LIST
SATURATION AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
207	No. 2 Acid Brine Tube Filter	NaCl, Water, NaOH, Mercury	Rubber Lined Steel		
208	No. 3 Acid Brine Tube Filter	NaCl, Water, NaOH, Mercury	Rubber Lined Steel		
209	No. 4 Acid Brine Tube Filter	NaCl, Water, NaOH, Mercury	Rubber Lined Steel		
210	No. 5 Acid Brine Tube Filter	NaCl, Water, NaOH, Mercury	Rubber Lined Steel		
211	No. 6 Acid Brine Tube Filter	NaCl, Water, NaOH, Mercury	Rubber Lined Steel		
221	Brine Storage Tank	NaCl, Water, NaOH, Mercury	Rubber Lined Steel		
228	No. 1 Saturated Brine Receiver	NaCl, Water, NaOH, Mercury	Fiberglass		
229	No. 1 Filtered Brine Receiver	NaCl, NaOH, Water, Mercury	Fiberglass		May Recycle to Holtrachem
231	No. 2 S. Spent Brine Tank	NaCl, NaOH, Water, Mercury, Chlorine	Fiberglass		
232	No. 2 Saturated Brine Receiver	NaCl, NaOH, Water, Mercury	Fiberglass		
233	Filtered Brine Storage	NaCl, NaOH, Water, Mercury	Fiberglass		
240	Super Pure Mud Tank		Carbon Steel		

APPENDIX
PROCESS EQUIPMENT LIST
SATURATION AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
258	Decant Filter, Mud Pump		Carbon Steel		
275	10 Wt% Caustic Pump	Sodium Hydroxide			
280	N. Acid Brine Filter, Mud Pump	NaCl, NaOH, Water, Mercury, Solids	Titanium		
281	S. Acid Brine Filter, Mud Pump	NaCl, NaOH, Water, Mercury, Solids	Titanium		
283	E. Neutralization Tank	NaOH, Na_2SO_4	Fiberglass		
285	No. 1 & 2 Anion Units	Water, Ion Exchange, Resin	Carbon Steel		
286	No. 3 & 4 Anion Units	Water, Ion Exchange, Resin	Carbon Steel		
288	No. 1 Cation Unit	Water, Ion Exchange, Resin	Carbon Steel		
289	No. 2 Cation Unit	Water, Ion Exchange, Resin	Carbon Steel		
	No. 1 Caustic Regeneration Tank	Sodium Hydroxide	Polyethylene		
	No. 2 Caustic Regeneration Tank	Sodium Hydroxide	Polyethylene		
	No. 1 Brine Regeneration Tank	NaCl, Water	Carbon Steel		
	No. 2 Brine Regeneration Tank	NaCl, Water	Carbon Steel		
316	10% Caustic Mix Tank	Sodium Hydroxide	Carbon Steel		

APPENDIX
PROCESS EQUIPMENT LIST
SATURATION AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
320	No. 2 N. Spent Brine Tank	NaCl, Water, NaOH, Mercury, Chlorine	Fiberglass		
352	No. 1 Acid Brine Filter, Mud Tank	NaCl, Water, NaOH, Mercury	Fiberglass		
621	S. Super Pure Filter, Mud Pump	NaCl, Water, NaOH, Mercury			

(MERGE1A)

DWG NO 434467A AREA "R"
REV 1

2 4 00770

APPENDIX
PROCESS EQUIPMENT LIST
NO. 1 CELL ROOM AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
	Cell	Hydrogen, Chlorine, NaCl, NaOH, Mercury, Water	Carbon Steel, Rubber Lined Steel	Electrolytic Cell Unit Includes: Electrolyzer, Denuder, Cooler and Mercury Pump	50 Units Exist, Mercury Recycled, Copper Grids Recycled
021	No. 1 Caustic Filter and Backwash	50 Wt% NaOH, Mercury, Carbon, Water	Carbon Steel, Nickel	Includes pressure Tube Filter and Backwash Tank	
257	Trap End Wash Water Tank	Water, Mercury	Carbon Steel		
279	Trap End Wash Water Heat Exchanger	Water, Mercury		Plate and Frame	
290	Trap End Wash Water Coolant Pump	Water, Mercury			
304	Pure Water Pump	Water, Mercury	Alloy 20		
308	N. Caustic Pump	50 Wt% NaOH, Mercury	Nickel		
309	S. Caustic Pump	50 Wt% NaOH, Mercury	Nickel		
312	N. Pure Water Storage	Water, Mercury	Carbon Steel	16,500 Gal. Vert. Tank	
313	S. Pure Water Storage	Water, Mercury	Carbon Steel	16,500 Gal. Vert. Tank	
314	Pure Water Head Tank	Water, Mercury	Carbon Steel	3,400 Gal.	
315	Pure Water Filters	Water, Mercury	Stainless Steel		

APPENDIX
PROCESS EQUIPMENT LIST
NO. 1 CELL ROOM AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
321	Caustic Collector	50 Wt% NaOH, Mercury			
362	No. 1 Cell Room Caustic Filter Backwash Catch Tank	Carbon, Dilute NaOH, Mercury, Water	Carbon Steel		
539	Degassing Cooler	Air	Carbon Steel		
723	N. Hydrogen Pump Separator and Cooler	Hydrogen, Mercury, Water	Carbon Steel	Liquid Ring Compressor, Shell & Tube Exchanger & Separator	May Recycle to Holtrachem
724	N. Hydrogen Pump Separator and Cooler	Hydrogen, Mercury, Water	Carbon Steel	Liquid Ring Compressor, Shell & Tube Exchanger & Separator	
725	S. Hydrogen Pump Separator and Cooler	Hydrogen, Mercury, Water	Carbon Steel	Liquid Ring Compressor, Shell & Tube Exchanger & Separator	
761	Hydrogen Snuffer	Hydrogen, Mercury, Water	Carbon Steel		
	Hydrogen Seal Pot	Hydrogen, Mercury, Water	Carbon Steel		

DWG NO 434467 A AREA "M"
REV. 1

2 4 00772

APPENDIX
PROCESS EQUIPMENT LIST
NO. 2 CELL ROOM AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
	Cell	Hydrogen, Chlorine, NaCl, NaOH, Mercury	Carbon Steel, Rubber Lined Steel	Electrolytic Cell Unit Includes: Electrolyzer, Denuder, Cooler and Mercury Pump	50 Units Exist, Mercury Recycled, Copper Grids Recycled
114	Hercules Pump & Separator	Hydrogen, Water, Mercury	Carbon Steel	Liquid Ring Compressor	
261	Trap End Wash Water Coolant Pump	Deionized Water, Mercury			
306	N. Pure Water Pump	Deionized Water, Mercury			
307	S. Pure Water Pump	Deionized Water, Mercury			
310	N. Caustic Pump	50 Wt% NaOH, Mercury	Nickel		
311	S. Caustic Pump	50 Wt% NaOH, Mercury	Nickel		
317	N. Pure Water Storage	Deionized Water, Mercury	Carbon steel		
318	S. Pure Water Storage	Deionized Water, Mercury	Carbon Steel		
319	Pure Water, Head Tank	Deionized Water, Mercury	Carbon Steel	3,400 Gal.	
320	Pure Water Filters	Deionized Water, Mercury, Misc. Solids	Stainless Steel		

APPENDIX
PROCESS EQUIPMENT LIST
NO. 2 CELL ROOM AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
322	Caustic Collector	50 Wt% NaOH, Mercury			
354	Chlorine Condensate Seal Pot	H_2O, Chlorine			
363	Caustic Filter, Backwash Catch Tank	Dilut· NaOH, Carbon, Mercury	Carbon Steel		
501	Caustic Filter and Backwash	NaOH, Carbo, Mercury	Nickel, Carbon Steel		Includes Pressure Tube Filter and Backwash Tank
502	Production Caustic Cooler	50 Wt% NaOH, Mercury	Nickel Tubes, Steel Shell		
540	Degassing Cooler	Air	Carbon Steel	Shell and Tube Exchanger	
626	Trap End Wash Water Tank	Deionized Water, Mercury	Carbon Steel		
720	N. Hydrogen Pump, Separator & Cooler	Hydrogen, Water, Mercury	Carbon Steel	Liquid Ring Compressor, Shell & Tube Exchanger & Separator	
721	N. Hydrogen Pump, Separator & Cooler	Hydrogen, Water, Mercury	Carbon Steel	Liquid Ring Compressor, Shell & Tube Exchanger & Separator	
722	S. Hydrogen Pump, Separator & Cooler	Hydrogen, Water, Mercury	Carbon Steel	Liquid Ring Compressor, Shell & Tube Exchanger & Separator	
762	Hydrogen Snuffer	Hydrogen, Water, Mercury	Carbon Steel		
	Hydrogen Seal Pot	Hydrogen, Water, Mercury	Carbon Steel		

DWG. NO. A34467-A AREA "L"
REV. 1

2 4 00774

APPENDIX
PROCESS EQUIPMENT LIST
CAUSTIC (NaOH) TANK FARM/LOADING AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
505	Caustic Circulating Pump	50 Wt% NaOH, Possible Mercury			
506	50% Loading Pump	50 Wt% NaOH, ppm of Mercury			
507	Caustic Cooler	50 Wt% NaOH	Nickel Tubes, Steel Shell	Shell and Tube Exchanger	May Recycle to Holtrachem
508	Truck Loading Storage	50 Wt% NaOH, ppm Mercury, Possible Mercury on Bottom	Epoxy Lined Carbon Steel		
509	No. 1 Caustic Storage	50 Wt% NaOH, ppm Mercury, Possible Mercury on Bottom	Epoxy Lined Carbon Steel	Vert. Tank 195,000 Gal.	
510	No. 2 Caustic Storage	50 Wt% NaOH, ppm Mercury, Possible Mercury on Bottom	Epoxy Lined Carbon Steel	Vert. Tank 195,000 Gal.	
511	No. 3 Caustic Storage	50 Wt% NaOH, ppm Mercury, Possible Mercury on Bottom	Epoxy Lined Carbon Steel	Vert. Tank 195,000 Gal.	

APPENDIX
PROCESS EQUIPMENT LIST
CAUSTIC (NaOH) TANK FARM/LOADING AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
512	No. 4 Caustic Storage	50 Wt% NaOH, ppm Mercury, Possible Mercury on Bottom	Epoxy Lined Carbon Steel	Vert. Tank 195,000 Gal.	
523	Pump to Bleach Plant	50 Wt% NaOH, ppm Mercury			
	Additive Pump	Sodium Gluconate			

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DWG NO 4344567-A AREA "A"
REV. 1

APPENDIX
PROCESS EQUIPMENT LIST
POWER AREA (HYDROGEN EQUIPMENT)

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
757	Hydrogen Seal Pot	Hydrogen, Water, Mercury	Carbon Steel		
797	Hydrogen Brink	Hydrogen,Water Vapor, Mercury	Carbon Steel		
800	Hydrogen Heat Exchanger	Hydrogen, Water Vapor, Mercury	Carbon Steel	Shell & Tube Exchanger	Insulated; May Recycle to Holtrachem
801	Hydrogen Heat Exchanger	Hydrogen, Water Vapor, Mercury	Carbon Steel	Shell & Tube Exchanger	May Recycle to Holtrachem

DWG NO 434467-A AREA "K"
REV 1

2 4 00777

APPENDIX
PROCESS EQUIPMENT LIST
CHLORINE PRODUCTS AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
334	S. Wet Brink Chlorine Filter	Chlorine Vapor, Moisture	Fiberglass		
401	No. 1 C&D Train, Strong Acid Pump	Up to 93 Wt% H_2SO_4			Not Installed
402	No. 1 C&D Train, Weak Acid Pump	71 Wt% H_2SO_4, Chlorine			Not Installed
403	No. 2 C&D Train, Weak Acid Pump	71 Wt% H_2SO_4, Chlorine			
404	No. 2 C&D Train, Strong Acid Pump	Up to 93 Wt% H_2SO_4, Chlorine			
405	No. 3 C&D Train, strong Acid Pump	Up to 93 Wt% H_2SO_4, Chlorine			
406	No. 3 C&D Train, Weak Acid Pump	71 Wt % H_2SO_4, Chlorine			
407	No. 1 C&D Train, Spare Acid Pump	Up to 93 Wt% H_2SO_4, Chlorine			Not Installed
408	No. 3 C&C Train, Spare Acid Pump	Up to 93 Wt% H_2SO_4, Chlorine			
409	Spent Acid Circulating Pump	71 Wt% H_2SO_4, Chlorine			
410	No. 1 NASH Compressor	Cl_2 Vapor, H_2SO_4	Carbon Steel	Liquid Ring Compressor with Vapor/Liquid Separator	Compressor Out
411	No. 2 NASH Compressor	Cl_2 Vapor, H_2SO_4	Carbon Steel	Liquid Ring Compressor with Vapor/Liquid Separator	

APPENDIX
PROCESS EQUIPMENT LIST
CHLORINE PRODUCTS AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
412	No. 3 NASH Compressor	Cl_2 Vapor, H_2SO_4	Carbon Steel	Liquid Ring Compressor with Vapor/Liquid Separator	
413	No. 4 NASH Compressor	Cl_2 Vapor, H_2SO_4	Carbon Steel	Liquid Ring Compressor with Vapor/Liquid Separator	
414	No. 5 NASH Compressor	Cl_2 Vapor, H_2SO_4	Carbon Steel	Liquid Ring Compressor with Vapor/Liquid Separator	
415	No. 7 Carbon Ring Compressor	Cl_2Vapor	Carbon Steel		
416	No. 8 Carbon Ring Compressor	Cl_2Vapor	Carbon Steel		
418	Genetron Pump Down Pump	CFC	Carbon Steel		
419	Chlorinated Water Pump	Water, Chlorine	Titanium		
420	No. 1 Chlorine Receiver Pump	Liquid Chlorine	Carbon Steel		
421	No. 2 Chlorine Receiver Pump	Liquid Chlorine	Carbon Steel		
422	No. 1 Acid Train	Cl_2 Vapor Up to 93 Wt%	Cast Iron	Two Packed Towers Each With Shell & Tube Exchanger	Exchangers Not Installed
423	No. 2 Acid Train	Cl_2 Vapor Up to 93 Wt%	Cast Iron	Two Packed Towers Each With Shell & Tube Exchanger	
424	No. 3 Acid Train	Cl_2 Vapor Up to 93 Wt%	Carbon Steel	Two Packed Towers Each With Shell & Tube Exchanger	
425	No. 1 NASH Acid Cooler	Up to 93 Wt%	Carbon Steel	Shell & Tube Exchanger	

APPENDIX
PROCESS EQUIPMENT LIST
CHLORINE PRODUCTS AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
426	No. 2 NASH Acid Cooler	Up to 93 Wt%	Carbon Steel	Shell & Tube Exchanger	
427	No. 3 NASH Acid Cooler	Up to 93 Wt%	Carbon Steel	Shell & Tube Exchanger	
428	No. 4 NASH Acid Cooler	Up to 93 Wt%	Carbon Steel	Shell & Tube Exchanger	
429	No. 7 Chlorine Compressor Scrubber	Chlorine Vapor	Carbon Steel		
430	No. 8 Chlorine Compressor Scrubber	Chlorine Vapor	Carbon Steel		
431	No. 7 Chlorine Compressor After Cooler	Chlorine Vapor	Carbon Steel		
432	No. 8 Chlorine after Cooler	Chlorine Vapor	Carbon Steel		
433	N. Wet Brink Chlorine Filter	Chlorine Vapor, Moisture	Fiberglass		
434	S. Dry Brink Chlorine Filter	Chlorine Vapor,	Carbon Steel		
435	No. 1 Carrier Chlorine Liquifier	Chlorine Vapor, Liquid Chlorine	Carbon Steel		
436	No. 2 Carrier Chlorine Liquifier	Chlorine Vapor, Liquid Chlorine	Carbon Steel		

APPENDIX
PROCESS EQUIPMENT LIST
CHLORINE PRODUCTS AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
437	No. 3 Carrier Chlorine Liquifier	Chlorine Vapor, Liquid Chlorine	Carbon Steel		
439	East Loop Seal	Liquid Cl_2, Inerts, Residual H_2SO_4	Carbon Steel	70 Ft. Into Ground	
440	West Loop Seal	Liquid Cl_2 Inerts, Residual H_2SO_4	Carbon Steel	70 Ft. Into Ground	
441	No. 1 Chlorine Receiver	Liquid Chlorine Residual H_2SO_4	Carbon Steel		Insulated
442	No. 2 Chlorine Receiver	Liquid Chlorine Residual H_2SO_4	Carbon Steel		Insulated
443	No. 3 Chlorine Receiver	Liquid Chlorine ResidualH_2SO_4	Carbon Steel		Insulated
444	No. 4 Chlorine Receiver	Chlorine Vapors Residual H_2SO_4	Carbon Steel		Insulated
445	Genetron Storage Tank	CFC	Carbon Steel		
446	Strong H_2SO_4 Tank	93 Wt% H_2SO_4	Carbon Steel	18,000 Gal. Horiz. Tank	
447	Weak H_2SO_4 Tank	71 Wt% H_2SO_4	Carbon Steel	18,000 Gal. Horiz. Tank	
467	No. 2 C&D Train Spare Acid Pump	Up to 93 Wt% H_2SO_4			
468	N. Chlorine Condensate Pump	Water, Soluble Chlorine	Titanium		
476	No. 2 C&D Train Spare Acid Pump	Up to 93 Wt% H_2SO_4, Soluble Cl_2			

APPENDIX
PROCESS EQUIPMENT LIST
CHLORINE PRODUCTS AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
477	No. 3 Chlorine Receiver Pump	Liquid Chlorine	Carbon Steel		Not Installed
478	S. Chlorine Condensate Pump	Water, Soluble Chlorine	Titanium		
479	Chlorine Condensate Pump	Water Soluble Chlorine	Titanium		No. 2 C.R.
485	No. 6 NASH Compressor & Separator	Up to 93 Wt% H_2SO_4 Soluble Cl_2	Carbon Steel		
	Brinks Wash Tank	Water, H_2SO_4	Carbon Steel		
	Abandon Genetron Tank	CFC	Carbon Steel		Adjacent to Equip. No. 444

DWG NO 434467-A AREA "T"
REV 1

APPENDIX
PROCESS EQUIPMENT LIST
CHLORINE PRODUCTS AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
066	No. 1 Receiver Pump N/N	Hydrochloric Acid			
067	No. 2 Receiver Pump N/S	Hydrochloric Acid			
068	No. 3 Receiver Pump S/N	Hydrochloric Acid			
080	No. 1 HCl Loading Pump	Hydrochloric Acid			
081	No. 2 HCl Loading Pump	Hydrochloric Acid			
084	No. 1 HCl Absorber Water Pump	Deionized H_2O			
085	No. 2 HCl Absorber Water Pump	Deionized H_2O			
086	No. 3 HCl Absorber Water Pump	Deionized H_2O			
087	No. 4 HCl Absorber Water Pump	Deionized H_2O			
090	No. 1 HCl Burner	Chlorine, Hydrogen and HCl Vapors	Graphite	Includes Falling Film Absorber	
091	No. 2 HCl Burner	Chlorine, Hydrogen and HCl Vapors	Graphite	Includes Falling Film Absorber	Removed
092	No. 3 HCl Burner	Chlorine, Hydrogen and HCl Vapors	Graphite	Includes Falling Film Absorber	Removed

APPENDIX
PROCESS EQUIPMENT LIST
CHLORINE PRODUCTS AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
093	No. 4 HCl Burner	Chlorine, Hydrogen and HCl Vapors	Graphite	Includes Falling Film Absorber	
096	No. 1 Burner Tails Tower and Scrubber	Inerts, HCl Vapors, Dilute HCl	Fiberglass	Packed Scrubbing Towers	
097	No. 2 Burner Tails Tower and Scrubber	Inerts, HCl Vapors, Dilute HCl	Fiberglass	Packed Scrubbing Towers	
098	No. 3 Burner Tails Tower and Scrubber	Inerts, HCl Vapors, Dilute HCl	Fiberglass	Packed Scrubbing Towers	
099	No. 4 burner Tails Tower and Scrubber	Inerts, HCl Vapors, Dilute HCl	Fiberglass	Packed Scrubbing Tower	Out of Service on Deck; May Recycle to Holtrachem
370	No. 1 HCl Storage, NE	Hydrochloric Acid	Fiberglass	20,000 Gal. Vert. Tank	May Recycle to Holtrachem
371	No. 2 HCl Storage, NW	Hydrochloric Acid	Fiberglass	20,000 Gal. Vert. Tank	
372	No. 3 HCl Storage, SE	Hydrochloric Acid	Fiberglass	20,000 Gal. Vert. Tank	
373	No. 4 HCl Storage, SW	Hydrochloric Acid	Fiberglass	20,000 Gal. Vert. Tank	
374	HCl Absorption Tower	Air and HCl Fumes, Water	Fiberglass	Packed Scrubbing Tower	Bleach Plant

APPENDIX
PROCESS EQUIPMENT LIST
CHLORINE PRODUCTS AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
375	HCl Absorption Tower Fan	Air, Trace HCl, Water Vapor	Fiberglass		Bleach Plant
376	HCl Absorption Tower	Air and HCl Fumes, Water	Fiberglass	Packed Scrubbing Tower	Loading Area
377	HCl Absorption Tower Fan	Air, Trace HCl, Water Vapor	Fiberglass		Loading Area
480	N. HCl Receiver Tank	Hydrochloric Acid	Fiberglass		May Recycle to Holtrachem
481	S. HCl Receiver Tank	Hydrochloric Acid	Fiberglass		May Recycle to Holtrachem

(MERGE3)

DWG. 434467-A AREA "S & P"
REV 1

APPENDIX
PROCESS EQUIPMENT LIST
BLEACH AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
045	Weak Gas Seal Pot	H_2O with Cl_2, Air, Low Conc. Cl_2 and H_2 Saturated with H_2O	Fiberglass		May Recycle to Holtrachem
105	Bleach Loading Filters	NaOCl, H_2O, NaCl, NaOH	CPVC	Sock Filter	May Recycle to Holtrachem
106	N. Reaciton Tank	NaOCl, H_2O, NaCl, NaOH	Fiberglass		May Recycle to Holtrachem
107	S. Reaction Tank	NaOCl, H_2O, NaCl, NaOH	Fiberglass		May Recycle to Holtrachem
108	Caustic Mix Tank	35 Wt% NaOH	Titanium		May Recycle to Holtrachem
118	No. 2 Weak Gas Fan	Air, Low Conc. of Cl_2, and H_2 Saturated with H_2O	Fiberglass		
119	No. 3 Weak Gas Fan	Air, Low Conc. of Cl_2, and H_2 Saturated with H_2O	Fiberglass		
132	S. Reaction Tank Pump	NaOH, NaOCl, NaCl and H_2O	Titanium		May Recycle to Holtrachem
134	S. Caustic Tank Mix Pump	35 Wt% NaOH			
136	E. Bleach Loading Pump	NaOCl, NaCl, NaOH, H_2O			May Recycle to Holtrachem
137	W. Bleach Loading Pump	NaOCl, NaCl, NaOH, H_2O			May Recycle to Holtrachem

APPENDIX
PROCESS EQUIPMENT LIST
BLEACH AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
138	N. Vertical Heat Exchanger	NaOCl, NaCl, NaOH, H_2O	Titanium Tubes, Steel Shell		May Recycle to Holtrachem
139	S. Vertical Heat Exchanger	NaOCl, NaCl, NaOH, H_2O	Titanium Tubes, Steel Shell		May Recycle to Holtrachem
551	N. Reaction Tank Pump	NaOCl, NaCl, NaOH, H_2O	Titanium		May Recycle to Holtrachem
553	E. Tower Circulating Pump	NaOCl, NaCl, NaOH, H_2O	Titanium		May Recycle to Holtrachem
554	W. Tower Circulating Pump	NaOCl, NaCl, NaOH, H_2O	Titanium		May Recycle to Holtrachem
557	No. 1 Second Stage Reactor Pump	NaOCl, NaCl, NaOH, H_2O	Titanium		Not installed
558	No. 2 Second Stage Reactor Pump	NaOCl, NaCl, NaOH, H_2O	Titanium		
560	Bleach Pump to LCP Storage	NaOCl, NaCl, NaOH, H_2O			
571	"P" Bleach Storage	NaOCl, NaCl, NaOH, H_2O	Rubber Lined Steel	Vert. Tank 35,000 Gal.	May Recycle to Holtrachem
572	No. 1 East Weak Gas Fan	Air, Low Conc. Cl_2, and H_2 Saturated with H_2O			
575	Weak Gas Switch Pot	H_2O with Cl_2, Air, Low Conc. Cl_2 and H_2 Saturated with H_2O	Fiberglass		

APPENDIX
PROCESS EQUIPMENT LIST
BLEACH AREA

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
576	East Tower	NaOH, NaOCl, NaCl, H_2O	Titanium	Packed Scrubber	May Recycle to Holtrachem
577	West Tower		Concrete Sections		Never Put In Service
578	East First Stage Reactor	NaOH, NaOCl, NaCl, H_2O	Concrete		Not In Service
579	West First Stage Reactor	NaOH, NaOCl, NaCl, H_2O	Concrete		Not In Service
582	No. 1 Kill Reactor	NaOH, NaOCl, NaCl, H_2O, Cl_2, H_2O, Copper Salt, NaHS	Concrete		
583	No. 2 Kill Reactor	NaOH, NaOCl, NaCl, H_2O, Cl_2, H_2O, Copper Salt, NaHS	Concrete		
584	"L" Bleach Storage	NaOCl, NaOH, NaCl, and H_2O	Rubber Lined Steel	Vert. Tank 35,000 Gal.	
585	"C" Bleach Storage	NaOCl, NaOH, NACl, H_2O	Rubber Lined Steel	Vert. Tank 35,000 Gal.	Out of Service; Being Repaired; May Recycle to Holtrachem
	East Tower, Caustic Tank	NaOH, NaOCl, NaCl, H_2O	Titanium		May Recycle to Holtrachem

DWG NO 434467-A AREA "F"
REV 1

APPENDIX
PROCESS EQUIPMENT LIST
POWER AREA (OIL STORAGES)

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
742	180 Oil Storage	Bunker "C"	Carbon Steel Brick Lined		By Boiler House
743	181 Oil Storage	Bunker "C"	Carbon Steel Brick Lined		By Boiler House
	92 Oil Storage	NaCl, NaOCl, NaOH, Water, Mercury Salts	Carbon Steel Brick Lined	Vert. Tank 105,000 Gal.	Bunker "C" Removed
	93 Oil Storage	NaCl, NaOCl, NaOH, Water, Mercury Salts	Carbon Steel Brick Lined	Vert. Tank 105,000 Gal.	Bunker "C" Removed
	94 Oil Storage	NaCl, NaOCl, HaOH, Water, Mercury Salts Bunker "C"	Carbon Steel Brick Lined	Vert. Tank 105,000 Gal.	
767	95 Oil Storage	NaCl, NaOCl, NaOH, Water Mercury Salts Bunker "C"	Carbon Steel Brick Lined	Vert. Tank 105 000 Gal.	
768	96 Oil Storage	NaCl, NaOCl, NaOH, Water, Mercury Salts Bunker "C"	Carbon Steel Brick Lined	Vert. Tank 105,000 Gal.	
769	97 Oil Storage	NaCl, NaOCl, NaOH, Water, Mercury Salts Bunker "C"	Carbon Steel Brick Lined	Vert. Tank 105,000 Gal.	

APPENDIX
PROCESS EQUIPMENT LIST
POWER AREA (OIL STORAGES)

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
	107 Oil Storage	NaCl, NaOCl, NaOH, Water, Mercury Salts Bunker "C"	Carbon Steel Brick Lined	Vert. Tank 105,000 Gal.	
	108 Impure Condensate	Water, NaCl	Carbon Steel Brick Lined	Vert. Tank 105,000 Gal.	
	Mineral Spirits Tank	Mineral Spirits	Carbon Steel		In Dike with Bunker "C" Tanks
	Additive Tank	Fuel Oil, Sludge Conditioner	Carbon Steel		In Dike with Bunker "C" Tanks

DWG. NO 434467-A AREA "O" & "V"
REV. 1

2 4 00790

APPENDIX
PROCESS EQUIPMENT LIST
POWER AREA (OIL STORAGES)

EQUIP. NO.	EQUIPMENT NAME	COMPOUNDS PRESENT	MAT'L OF CONST.	SIZE/DESCRIPTION	OTHER
282	Mercury Still	Amalgam, Mercury	Carbon Steel, Masonry	Gas Fired Batch Furnace	May Recycle to Holtrachem
	Mercury Retort	Amalgam, Mercury	Carbon Steel, Refractory		On Still Pad. Not Installed
	Chlorine Tank Cars	Chlorine, Dry Air			80 Cars
	Cooling Tower	NaCl, NaOH, NaOCl, Water	Concrete Sump Wood Structure		Out of Service

(MERGE4)

DWG. NO. 434467-A AREAS "C", "B" & "D"
REV. 1

The Waste Water Treatment System consisting of the trenches, sumps and treatment plant will not be washed. The system will be run empty and left in-place to handle any contaminated water and sludges that may result from future demolition. The Waste Water Treatment Plant is on Dwg. No. 434467-A Area "G".

APPENDIX

TEST METHODS

In order to confirm that equipment has been decontaminated, one or more of the following procedures will be utilized:

- Whenever practical, a visual inspection will be made to assure that no liquid heel and/or elemental mercury are present.

- The wash water/solution will be analyzed to confirm pH, mercury concentration and/or free chlorine.

- Vapor space will be tested for chlorine, hydrogen and mercury concentration.

The test method(s) utilized will be dictated by what compounds were present. The Compounds expected are tabulated on the Process Equipment List in the Plant Decommissioning Work Plan.

pH will be determined by one of the following methods:

- EPA pH electrometric measurement, Method 9040
- EPA pH paper, Method 9041A
- LCP analytical method using Big Scale pH Meter, Model 707-B
- LCP analytical method using pH paper

Hypochlorite concentration will be determined by one of the following methods:

- Analytical procedure described in Section 9 of "Practical Guide to Chlorine Bleach Making" Allied Chemical, Technical Service Bulletin, 72-19

- LCP analytical method for free chlorine

Mercury Vapor concentration will be determined by one of the following methods:

- NIOSH Method 6009
- Procedure associated with Model 551 Gold Film Mercury Vapor Analyzer

Soluble Mercury concentration will be determined by one of the following methods:

- LCP procedure using Bacharach Colemen Analyzer Model 50B
- EPA Mercury in Liquid Waste, Method 7470

Chlorine Vapor concentration will be determined by using drager tubes.

Hydrogen, Combustibles and Oxygen concentrations will be determined using a MSA Explosimeter, Model 3. This meter is calibrated using hydrogen.

APPENDIX

USED EQUIPMENT

Any item leaving the site for use in other chlor-alkali facilities will not be decontaminated provided it will be installed in a similar service where mercury contamination will immediately reoccur. However, the item(s) will be drained, flushed, and sealed to prevent leakage of mercury or its vapors. In addition, the item(s) will be properly labeled to meet all requirements for transport of hazardous materials.

(APPTMUE)

APPENDIX
NAMES, CHEMICAL FORMULAS AND ACRONYMS

In the course of decommissioning various names, chemical formulas and acronyms will appear on process equipment labels, work plans and operating instructions. The following is a list of some of these:

NaCl	-	Sodium chloride, salt
NaOCl	-	Sodium hypochlorite, bleach
NaOH	-	Sodium hydroxide, caustic
NaHS	-	Sodium hydrosulfide, NASH (not to be confused with a Nash vacuum pump)
Hg	-	Elemental mercury
Cl_2	-	Chlorine
H_2	-	Hydrogen
H_2O	-	Water
H_2SO_4	-	Sulfuric acid
HCl	-	Hydrochloric acid, hydrogen chloride
Na_2SO_4	-	Sodium sulfate
HgS	-	Mercuric sulfide
$HgCl_2$	-	Mercuric chloride
Amalgam	-	An alloy of mercury with another metal
Bleach	-	An aqueous solution of sodium hypochlorite containing sodium chloride and sodium hydroxide
Brine	-	An aqueous solution of sodium chloride of various concentrations. Can contain other salts. Can be acidic or basic.
Caustic	-	An aqueous solution of sodium hydroxide with concentrations up to 50 wt%
Wt%	-	Weight percent
pH	-	A number used to identify a solution as acidic, neutral or basic. 7 is considered neutral, 1 is very acidic and 14 is very basic
ppm	-	Parts per million
ppb	-	Parts per billion

(APELNCFA)

APPENDIX
REFERENCE LIST

1. Waste Water Treatment Operating Procedures
2. Health and Safety Plan by Geosyntec
3. Plant Code of Accounts
4. Test Methods, LCP-Georgia

(ARL)